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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the glass antenna for cars which outputs the input signal of an AM radio broadcast band, an FM radio broadcast band, and a television broadcasting band from the antenna of the conductive pattern on the rear glass surface of a car.

[0002]

[Description of the Prior Art]Drawing 7 is a lineblock diagram of the conventional glass antenna for cars. 164 is rear glass of a car and 165 and 166 are the conductor wires (heater wires) of a defogger. The defogger pattern is formed in horseshoe-shaped with two or more conductor wires parallel to the conductor wires 165 and 166 which connect the common electrodes 167 and 168 of the both-sides end of a glass surface, and 169.

[0003]The antenna pattern which consists of the conductor wires 170-180 and the power supply terminal 181, The parallel conductor wire 174 which has been arranged at the unfilled space part of the defogger pattern upper part, and adjoined the horizontal conductor wire 165 of the defogger, Connect with the conductor wire 174 with the conductor wire 175 of a left-hand side perpendicular direction, and it has the two parallel conductor wires 173 and 172, . Pass the conductor wire 179 of a short perpendicular direction in the horizontal conductor wire 178 connected to left-hand side through the conductor wire 177 of a perpendicular direction shorter than the center of the horizontal conductor wire 176 parallel to the glass top chord near the window frame of the body. Connect with the top conductor wire 172 among three horizontal conductor wires parallel to the conductor wire of a defogger, and the conductor wire 172 with the conductor wire 171 of a right-hand side perpendicular direction. It connected with the horizontal conductor wire 170 which approached the conductor wire 176 parallel to the glass top chord near the window frame of the body, and has been arranged on right-hand side, and has connected with the power supply terminal 181 with the horizontal conductor wire 180 from the middle of the vertical conductor wire 171.

[0004]182 is a choke coil, and in between, while connected the voltage stabilization capacity 183 and it lets the power source wires 184 and 185 pass for two terminals, The power source wires 187 and 188 which were connected to DC-power-supply potential  $V_{DD}$  via the earth potentials and the switch 186 of the body, respectively, and were connected to two terminals of another side of a choke coil are connected to the two common electrodes 169 and 168, respectively. Heat two or more conductor wires of a defogger, and glass is kept from blooming cloudy with low temperature or humidity, and a switch is turned OFF, when climate is

good and does not need to heat. [ a switch ]

[0005]The signal wire 189 from the inner conductor of the end of the coaxial cable 191 is connected to the power supply terminal 181 of an antenna pattern, The earthing conductor 190 connected to the outer conductor is connected to the nearby body, and the input signal X of an antenna is outputted from the inner conductor by setting the outer conductor of the other end of the coaxial cable 191 to earth-potentials GND.

[0006]This conventional glass antenna for cars is an object for reception of an AM radio broadcast band and an FM radio broadcast band, and since the number of antennas is one, as an object for reception of a television broadcasting band, its characteristic is not enough. It is because a television picture will become ambiguous or will change in the direction of low sensitivity, if the receiving sensitivity of an antenna has directivity in order that a car may take various directions to the transmit radio wave from a broadcasting station.

[0007]

[Problem(s) to be Solved by the Invention]This invention provides newly the glass antenna for cars which cancels the above-mentioned fault which conventional technology has and which outputs the input signal of an AM radio broadcast band, an FM radio broadcast band, and a television broadcasting band.

[0008]

[Means for Solving the Problem]A glass antenna for cars, wherein this invention is provided with an antenna pattern characterized by comprising the following.

An antenna pattern which connected a defogger pattern which consists of two or more parallel conductor wires which tie a common electrode of a both-sides end on a rear glass surface of a car with a conductor wire.

It is in a center section, or the upper right and a left flank of the unfilled space part upper part of a defogger pattern, and the bottom, An antenna pattern which has one fourth of the conductor wires of length of wavelength in glass of a signal of frequency near the high frequency band of one fourth of conductor wires of length and VHF television broadcasting of wavelength in glass of a signal of frequency which is near the high frequency band of VHF television broadcasting from an FM radio broadcast band.

A conductor wire of one fourth of the length of wavelength in glass of a signal of frequency near the high frequency band of VHF television broadcasting.

[0009]

[Function]In this invention, the antenna pattern which connected the defogger pattern with the conductor wire An AM radio broadcast band, From an FM radio broadcast band, use VHF and a UHF television broadcasting band as one antenna to receive, and The unfilled space part upper part of a defogger pattern, and a lower center section, Two or more antenna patterns which have one fourth of the conductor wires of length of the wavelength in the upper right and the glass of the signal of the frequency which is near the high frequency band of VHF television broadcasting in a left flank are arranged. The antenna pattern which has a conductor wire of one fourth of the length of the wavelength in the glass of the signal of the frequency which is near the high frequency band of VHF television broadcasting from an FM radio broadcast band further is in two or more of the antenna patterns, It is considered as another antenna which receives VHF and a UHF television broadcasting band from an FM radio broadcast band.

[0010]By carrying out diversity reception of the FM radio broadcast band with the two antennas, and carrying

out diversity reception of the television broadcasting band with two or more antennas which added the antenna pattern from which a spacial configuration differs at the two antennas, The direction of the low sensitivity of each antenna is compensated mutually, and the antenna of good receiving sensitivity is obtained in every direction of a car.

[0011]

[Example] Drawing 1 is a lineblock diagram of the glass antenna for cars of this invention, and shows the 1st example. 1 is rear glass of a car and 2 is a conductor wire of a defogger. The defogger pattern is formed in the shape of [ of the day ] a character with two or more conductor wires parallel to the conductor wire 2 to which the common electrodes 3 and 4 of the both-sides end on a glass surface are connected. The antenna pattern which connected the defogger pattern to the power supply terminal 7 with the conductor wires 5 and 6, The antenna pattern which is formed in the flank on the left of [ upper part ] a defogger pattern and its unfilled space part, and serves as the conductor wires 8, 9, and 10 from the power supply terminal 15 11, 12, 13, and 14, The antenna pattern set to the conductor wires 16, 17, and 18 used as a pair, and 20, 21 and 22 from the power supply terminals 19 and 23, The antenna pattern which is formed in the center section of the unfilled space part upper part of a defogger pattern and the bottom, respectively, and consists of the conductor wires 24, 25, and 26 and the power supply terminal 27 is formed in the flank on the right of [ upper part ] the unfilled space part of a defogger pattern.